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TREATMENT-RELATED CHANGES IN PSYCHOPATHY FEATURES AND BEHAVIOR IN ADOLESCENT OFFENDERS

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The impact of changes in psychopathy characteristics on institutional behavior was assessed in 127 incarcerated delinquent males who were treated in a specialized intensive treatment program. Participants were administered the self-report version of the Antisocial Processes Screening Device (APSD) on admission to the program and every 90 days through treatment. Changes in all APSD scales predicted improvement in institutional behavior and treatment involvement. For the 77 youth who had at least three administrations, repeated-measures analysis of variance showed significant changes in APSD total, Callous/Unemotional, Narcissism, and Impulsivity scores. For 127 youth who had at least two administrations and daily behavioral ratings, changes in each scale predicted improved institutional behavior and treatment compliance.

Keywords: psychopathy; treatment; callous/unemotional symptoms; Antisocial Processes Screening Device; juvenile delinquents

The role of psychopathic features in the development and persistence of antisocial behavior has been an increasing topic of recent research (Pardini & Loeber, 2008; Salekin & Lochman, 2008). These research findings have suggested that adolescents who exhibit a pattern of characteristics consistent with psychopathic personality in adults tend to engage in a particularly severe and persistent form of antisocial behavior. An important reason for measuring psychopathic characteristics in youth is the hope that through early identification, individuals exhibiting psychopathy features may be amenable to treatment (Frick, Cornell, Barry, Bodin, & Dane, 2003; Pardini & Loeber, 2007, 2008; Salekin & Lochman, 2008; Skeem & Petrila, 2004). If youth with psychopathic traits are indeed more amenable to treatment, investing resources into intensive treatment programs geared toward the highest-risk youth may prove both cost-effective (Caldwell, Vitacco, & Van Rybroek, 2006) and clinically warranted (Caldwell, Skeem, Salekin, & Van Rybroek, 2006).

Although mean level measurements of basic personality traits have been shown to be relatively stable over time (Roberts, Caspi, & Moffitt, 2003; Robins, Fraley, Roberts, & Trzesniewski, 2001; Vaidya, Gray, Haig, & Watson, 2002), this stability is not absolute. Studies have shown that basic personality traits can change, particularly in adolescence

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and early adulthood (Blonigen, 2010), but continuing through much of adult life (Caspi & Roberts, 2001; Caspi, Roberts, & Shiner, 2005; Soto, John, Gosling, & Potter, 2011). Personality has a hierarchical structure with several facet traits that are subsumed under the more stable basic traits. With each step down the hierarchical ladder, the behavioral outcomes associated with traits are more susceptible to situational and social influences, particularly during adolescence and early adulthood (Caspi & Roberts, 2001). For these reasons, specific behaviors, such as interpersonal violence, are likely to be far less stable over time than the contributing underlying traits.

The stability of psychopathic traits first manifesting in youth or adolescence has been the focus of several recent articles (Barry, Barry, Deming, & Lochman, 2008; Loeber, Burke, & Lahey, 2002; Lynam, 2008; Lynam, Caspi, Moffitt, Loeber, & Stouthamer-Loeber, 2007; Lynam, Loeber, & Stouthamer-Loeber, 2008; Muñoz, Kerr, & Besic, 2008; Pardini & Loeber, 2007). In sum, these studies reveal that rank order stability of psychopathic characteristics shows only moderate variation over time. However, substantial individual variation has been reported in growth trajectories for interpersonal callousness (Pardini & Loeber, 2007). This finding is particularly pertinent, as callousness is considered a defining feature of psychopathy throughout the life span (Frick & Hare, 2001). Although impulsive antisocial behavior is common in children with behavioral disorders, the presence of emotional and personality traits of callousness, empathy deficits, and aggressive narcissism are thought to distinguish youth with psychopathic symptoms from those with other behavioral disorders (Salekin, Neumann, Leistico, DiCicco, & Duros, 2004). Callous/unemotional symptoms have been found to designate a group of children who have more severe and aggressive conduct problems (Christian, Frick, Hill, Tyler, & Frazer, 1997; Frick, Kimonis, Dandreaux, & Farrell, 2003; Frick, Stickle, Dandreaux, Farrell, & Kimonis, 2005; Kruh, Frick, & Clements, 2005), have an earlier onset of conduct problems (Silverthorn, Frick, & Reynolds, 2001), have more emotional and behavioral dysregulation (Frick, Cornell, et al., 2003), and are more apt to develop antisocial personality features in adulthood (Pardini & Loeber, 2007). Likewise, narcissistic traits have been associated with low self-control (Vaughn, DeLisi, Beaver, Wright, & Howard, 2007), oppositional defiant and conduct disorder symptoms (Frick, Bodin, & Barry, 2000), and the expression of anger and aggression (Barry et al., 2007; Bushman & Baumeister, 2002; Papps & O'Carroll, 1998).

Despite the widely accepted salience of psychopathic features in the severity and persistence of aggressive and antisocial behavior in adolescence, the potential for intervention to alter these symptoms has remained largely unexamined. There is some support for the view that appropriate treatment may affect the behavioral manifestations of psychopathy (Caldwell, McCormick, Umstead, & Van Rybroek, 2007; Caldwell, Skeem, et al., 2006; Skeem, Monahan, & Mulvey, 2002). However, these studies did not examine the impact of treatment on the core personality features (e.g., narcissism and/or callousness). With that limitation in mind, the primary purpose of this study is to examine changes in characteristics of callousness, narcissism, and impulsivity in a group of severely conduct disordered adolescent males throughout the course of intensive treatment.

THE TREATMENT PROGRAM

The Mendota Juvenile Treatment Center (MJTC) is a 29-bed secured juvenile correctional facility designed to provide psychiatric care to adjudicated male juvenile delinquents

who have been transferred from one of the state's two larger secured juvenile correctional facilities. Youth are selected for transfer to the treatment program when they fail to adjust to the usual secured juvenile corrections milieu. The selection of youth who are transferred to the treatment program is the responsibility of the staff in the sending institution. The primary criterion for transfer is that the youth has failed to adjust and make progress in the rehabilitation program at the sending secured institution. The youth are not prescreened by the treatment program staff, and the program has no exclusion criteria such as low IQ, psychosis, neurological deficits, or antagonistic resistance to treatment. Indeed, any of these conditions may serve as the basis of a decision to transfer the youth to the treatment center.

The treatment program has a unique clinical/correctional hybrid structure. Although operated under the administrative code of the Department of Corrections as a secured correctional facility, the program is housed on the grounds of a state psychiatric hospital, the staff are employed by the hospital, and the hospital is responsible for the day-to-day operations. The treatment is provided in a multidisciplinary treatment team model, similar to the model used in the psychiatric treatment units in the hospital.

The treatment program emphasizes interpersonal processes, skill acquisition, and the development of conventional social bonds to displace delinquent associations and activities (Gottfredson & Hirschi, 1990; Sampson & Laub, 1997; Sherman, 1993). The program uses an extensive behavioral assessment system and behavior treatment program that initially focuses on improving the adolescent's daily interpersonal functioning. The adolescent's initial behavioral success and development of meaningful working relationships with staff enables the youth to participate more fully in the full complement of treatment services.

Behavioral assessment system. The behavioral assessment system provides salient and immediate feedback to the adolescent and staff on the adolescent's response to treatment. The system provides interpersonal behavioral data concerning targeted treatment areas. The data are used in programming on a daily basis. At the end of each shift, staff meet as a group and rate each youth's behavior and treatment compliance using three 10-point behavior rating scales (rating peer interactions, interactions with staff, and rule compliance) and two 6-point behavior rating scales (rating performance in treatment groups and in school classes). Each point of each scale is made up of observable behavioral anchors. At the conclusion of the day, ratings from each shift are combined to produce a single score, which represents the youth's overall performance for the day. Scores are entered into a computer database that can plot the scores for any youth over any time period to be used in treatment planning and as concrete feedback to the youth and are used in programming the next day. Data from the behavioral assessment system also contribute to treatment team decisions. To ensure the integrity of the system, each staff member is provided extensive orientation and training at the beginning of his or her employment, and the overall program and individual ratings are supervised by a licensed psychologist.

Contingency management and treatment program. The behavioral treatment program uses the data from the behavioral assessment system and provides rewards and privileges that are highly responsive to changes in the youth's behavior. The youth's behavior ratings on any given day determine his or her level of privileges the following day. A youth can earn an additional set of privileges (e.g., computer game time, snacks, and private music) by combining several consecutive days of positive ratings. In this way, the program relies on a transparent and

easily understandable system that offers concrete, readily available, and rapidly increasing incentives for positive interpersonal functioning, behavioral control, and participation in treatment.

The primary objective is to foster engagement in the full treatment program, which includes school services, group treatment focused on anger management, social skills, problem solving, and substance abuse, as well as programming for specific areas such as substance abuse and sex offender treatment issues. Youths typically have several individual counseling sessions each week with a psychologist, psychiatrist, or social worker. Family members and other sources of community support are included in these counseling sessions whenever possible. Psychopharmacological interventions are provided and supervised by the staff psychiatrist. Although the program operates as a secured correctional facility, the treatment is provided in a multidisciplinary treatment team model, similar to the model used in the psychiatric treatment units in the hospital.

METHOD

PARTICIPANTS

The complete sample included 127 male adolescent delinquents consecutively admitted to the treatment center who had at least two administrations of the Antisocial Process Screening Device (APSD; Frick & Hare, 2001) and complete behavioral data. The APSD is a measure of psychopathic features designed for use with children and adolescents. Seventy-seven of these had at least three consecutive administrations of the APSD: at admission and after 90 days and 180 days of treatment during their stay at the MJTC. The MJTC is a small, specialized correctional treatment program designed to rehabilitate highly aggressive and disruptive delinquent males. Of the remaining 50 participants, 46 had been discharged before the 180-day administration and 4 had missing 90-day APSD data. As a result, 77 youth made up the participants who had complete data for the three time levels.

Participants were approximately 16 years of age ($M = 16.1$, $SD = 0.89$ years) at the time of admission. Fifty-three percent of the participants were African American, 44% were White, and the remainder was composed of Native American and Hispanic youth. The youth studied here had an extensive history of behavioral problems. Adolescents in this sample were arrested at a relatively young age ($M = 11.3$ years, $SD = 2.2$ years) with a large number of previous charges ($M = 9.9$, $SD = 6.5$), and with several of those charges involving crimes against persons ($M = 3.0$, $SD = 2.5$). Just more than 80% had been charged with an institutional infraction involving fighting or battery. The typical offender in this study had significant academic delays ($M = 3.1$ years delayed, $SD = 3.4$ years).

This study relies on data recorded in treatment records as part of the routine treatment of youth at the treatment center. Appropriate Institutional Review Board review and approval was obtained before data were aggregated for analysis, and appropriate measures to ensure the confidentiality of the data were followed in the study.

MEASURES

Participants were administered a battery of tests during the admission assessment process. Measures that tap into treatment-relevant areas are readministered every 90 days throughout treatment. For this study, the scores in the three time periods were compared

for the 77 youth for whom complete APSD data were available. For the repeated-measures analysis of variance (ANOVA), admission scores, 90-day scores, and 180-day scores comprised the three time levels; T1, T2, and T3, respectively.

APSD. The APSD (Frick & Hare, 2001) is a 20-item rating scale based on the Psychopathy Checklist–Revised (Hare, 1991). It was originally designed to be completed by parents and teachers on preadolescents. The self-report version used in the current study was designed for adolescents between the ages of 13 and 18 years (Caputo, Frick, & Brodsky, 1999; Silverthorn et al., 2001). Each item is self-rated by the youth on a 3-point scale (0 = *not at all true*, 1 = *sometimes true*, and 2 = *definitely true*). Scores on the self-report version of the APSD have been found to designate a more severe and violent group of juvenile delinquents (Caputo et al., 1999; Christian et al., 1997; Frick, Cornell, et al., 2003; Kruh et al., 2005) and to be stable over extended periods of time (Barry et al., 2008; Frick, Kimonis, et al., 2003; Muñoz & Frick, 2007).

The factor structure of the self-report APSD has been somewhat unclear. The original factor structure of the parent- and teacher-rated scale included two factors (Frick, O'Brien, Wootton, & McBurnett, 1994). Subsequent studies suggested a three-factor structure (Frick et al., 2000). Using a latent variable confirmatory factor analysis Vitacco, Rogers, and Neumann (2003) found support for a three-factor solution but reported nonsignificant factor loading value for item 19 ("I hide my feelings and emotions from others") in the three-factor solution.

In a review of 11 studies, Poythress and colleagues (2006) noted that the internal consistency of the Callous/Unemotional factor in the three-factor solution has been inconsistent, and Items 19 and 20 performed Narcissism ($\alpha = .75$) scales were acceptable; Callous/Unemotional scale showed only moderate internal consistency ($\alpha = .47$), and the CITC value for item 19 was poor (CITC = .05). Removing item 19 from the scale resulted in a 5-item scale with slightly improved internal consistency ($\alpha = .54$).

Data from admission administrations of the APSD on MJTC fit the three-factor model previously identified through empirical research (Frick et al., 2000; Vitacco et al., 2003) but with several differences in the item loadings. Specifically, Items 8 (Brags about abilities) and 15 (Gets angry when corrected) loaded on the Impulsivity scale, and Items 2 (Engages in illegal acts), 6 (Lies easily), and 13 (Does risky things) loaded on the Callous/Unemotional scale. Internal consistency for the total score (Cronbach's $\alpha = .78$) and for the scales was acceptable (Cronbach's α for Callous/Unemotional, Impulsivity, and Narcissism scales were .67, .71, and .69, respectively).

Behavioral scores. The behavioral assessment system provided a sensitive measure of treatment involvement and compliance with behavioral expectations. Consensus scores are compiled at the end of each shift and combined to calculate a total that represents the percentage of possible points earned for that day. For this study, a mean behavioral score for each participant was calculated based on the daily scores for the first 3 weeks of treatment to calculate the admission score. For the final behavioral score, the mean daily behavioral scores for the final 3 weeks of treatment was calculated. In a previous study of a nonoverlapping group of 86 youth treated in the program, the final behavioral score was found to significantly predict violent recidivism over a 4.2-year follow-up (Caldwell et al., 2007).

TABLE 1: Repeated-Measures Analysis of Variance for APSD Scores at Admission (T1), 90 Days (T2), and 180 Days (T3) of Treatment (n = 77, df factor/error = 2/152)

			95% CI
Scale	F *statistic*	η^2	*Lower/Upper*
APSD total	44.22***	.37	.25/.46
Callous/unemotional	30.64***	.29	.17/.39
Narcissism	12.48***	.14	.05/.24
Impulsivity	38.56***	.34	.21/.43

Note. APSD = Antisocial Processes Screening Device.
***$p < .00001$.

DATA ANALYTIC STRATEGY

Changes in total and scale scores for the APSD were evaluated using a repeated-measures ANOVA with the scores obtained at admission, 90 days, and 180 days as the three time measurement levels (T1, T2, and T3).

To determine if changes in the APSD scale scores had a significant effect on the participant's behavior, a hierarchical regression analysis was conducted for each scale. To predict the final behavioral score, the admission behavioral score and the admission APSD scale scores were individually entered on the first step, followed by the final scale score, in a series of hierarchical linear regression equations. By entering the admission score on the first step of these analyses, any change in the prediction equation that occurs when the final score is entered is attributable to the difference between the admission and final scores. To improve the power of these tests, and to provide a greater range of values, data for all 127 participants who had admission and at least one other APSD administration were included.

RESULTS

Time in the treatment program appeared to significantly affect characteristics associated with psychopathy, at least during active treatment. The results of the repeated-measures ANOVA are presented in Table 1. Scores of the APSD significantly improved for the 77 youth who had three administrations of the measure. For the APSD total and scale scores, a one-way repeated-measures ANOVA showed a main effect for time (admission, 90 days, and 180 days) in each analysis. For the APSD total, the mean change in scores was significant for each level of time, and the total change in scores was –7.39 ($p < .0005$). Similarly, for the Impulsivity scale, the mean change in scores was significant for each time interval, and the total change was –3.00 ($p < .0005$). However, for the Callous and Narcissism scales, the change in the first time interval was approximately half that observed in the 90- to 180-day time interval. For the Callous/Unemotional scale, the mean change was significant in both time levels and the total mean change was –2.22 ($p < .0005$). In contrast, for the Narcissism scale, the change in the first time interval was not significant (mean change = –.38, n.s.), and the total change was modest (mean change = 1.20, $p < .05$).

Although evidence that scores on psychopathy and related measures can improve over the course of treatment is encouraging, this improvement does not necessarily predict positive

TABLE 2: Hierarchical Regression to Predict Final Behavioral Scores

	F *Change*	R^2 *Change*	*Beta*	*95% CI (Lower/Upper)*
Step 1: Admission behavior and APSD total score	29.63**	.32		
Step 2: Final APSD total	18.27**	.09	–.71	–1.04/–0.38
Step 1: Admission behavior and Callous/ Unemotional	28.34**	.31		
Step 2: Final Callous/Unemotional	16.89**	.08	–1.80	–2.67/–0.933
Step 1: Admission behavior and Narcissism	29.41**	.32		
Step 2: Final Narcissism	7.41*	.04	–1.59	–2.74/–0.43
Step 1: Admission behavior and Impulsivity	28.13**	.31		
Step 2: Final Impulsivity	10.65*	.06	–1.35	–2.17/–0.53

Note. APSD = Antisocial Processes Screening Device. For each analysis, $df = 3/123$, $n = 127$.
*$p < .01$. **$p < .0001$.

behavior. To examine whether changes in APSD scores predicted positive behavior, a series of hierarchical regressions was performed.

The results of the hierarchical linear regressions to predict the final behavioral scores are presented in Table 2. After controlling for admission behavioral score and admission APSD scale scores, the final APSD total score and each scale score predicted the final behavioral score.[1]

DISCUSSION

For years, the potential for treatment to alter serious conduct problems underpinned by psychopathic traits has been viewed pessimistically by clinicians and researchers alike. This was especially true for callous/unemotional traits, often considered to comprise the core of psychopathy. Although the belief that psychopathic features are untreatable has been disputed (D'Silva, Duggan, & McCarthy, 2004; Salekin, 2002; Wong & Hare, 2005), there has been minimal empirical evidence indicating these characteristics can be effectively treated. Recent studies have found that the behavioral manifestations associated with psychopathy can respond to treatment (Caldwell, Skeem, et al. (2006) Caldwell et al. 2007; Rogers, Jackson, Sewell, & Johansen, 2004; Skeem et al., 2002). The current study extends this body of research to indicate that the traits associated with psychopathy can respond favorably to treatment in juvenile offenders.

The results reported here indicate that the personality features associated with psychopathy in youth can be effectively reduced through intensive treatment, even in severely behaviorally disordered adolescents. In study participants, callous/unemotional, narcissistic, and impulsive traits changed significantly over the course of treatment. In addition, decreases in psychopathic features predicted positive institutional behavior. The results of large-scale studies (Frick et al., 2005; Pardini & Loeber, 2008) have demonstrated that the presence of callous/unemotional traits in childhood and adolescence leads to poor outcomes in young adulthood. Clearly, the prospect of altering the trajectory of youth with these traits through intense, focused treatment offers a potentially significant advancement in treating behaviorally disordered adolescents.

IMPLICATIONS FOR RESEARCH, POLICY, AND PRACTICE

Beyond the fact that treatment can work, the results reported here provide some indications for what should be included in a treatment program devoted to improving these characteristics in adolescents. Although it is not possible to identify which characteristics of the program were most beneficial, several components seem likely to have been important in producing these results.

Several authors have recommended that the behavioral manifestations of psychopathy serve as the foundation of any treatment for psychopathic individuals (Harris & Rice, 2006; Wong & Hare, 2005). The treatment program described here includes a well-developed behavioral assessment system that allows for almost immediate feedback to the youth and treaters alike and allows for data-driven treatment decisions and adjustments to the individualized treatment programs. The results described here suggest that internal characteristics can be meaningfully accessed and altered through the door of overt interpersonal behavior.

The treatment center also includes a well-developed program specifically designed to improve the adolescent's engagement and participation in treatment programming. Adolescents with psychopathic features have been found to be more likely to be expelled or drop out of treatment and to show poor motivation in treatment (Falkenbach, Poythress, & Heide, 2003; Gretton, McBride, Hare, O'Shaughnessy, & Kumka, 2001). Effective treatment with this group may require specific programming designed to prevent drop-outs and treatment withdrawals.

The treatment program also places an emphasis on the interpersonal processes that underpin the disruptive and aggressive behavior of these adolescents. Processing of social cues has been linked to aggressive behavior (Dodge, Price, Bachorowski, & Newman, 1990; Dodge & Schwartz, 1997; Kimonis, Frick, Fazekas, & Loney, 2006; Serin & Kuriychuk, 1994; Slaby & Guerra, 1988). The treatment program closely monitors interpersonal behavior with adult staff and adolescent peers. Interpersonal behavior is a basic treatment target, and improvement in interpersonal functioning is seen as a direct measure of treatment progress.

Recently, juvenile justice policy in the United States has tended to blur the distinction between adult and juvenile offenders (Garfinkle, 2003; Steinberg & Scott, 2010). In part, these trends have rested in the assumption that certain juveniles are innately dangerous and unlikely to respond to treatment. These results indicate that traits associated with serious criminal behavior are amenable to appropriate treatment of sufficient intensity. These results support earlier research that suggests that serious and violent juvenile offenders may be more effectively treated with intensive treatment interventions (Aos, Phipps, Barnoski, & Lieb 2001; Caldwell, Vitacco, et al., 2006; Caldwell et al., 2007).

LIMITATIONS

The results of the current study must be considered in light of some significant methodological limitations. One important limitation involves the nature of the population studied. Although participants were identified through an institutional process as being resistant to treatment, it may be that the characteristics studied here would be more stable in a less disruptive population. However, for this to be the case, characteristics would be more stable

when they are less maladaptive and more changeable when they are more maladaptive. Obviously, characteristics are maladaptive when they do the opposite: fail to adapt.

An additional limitation is the lack of detailed information concerning what aspects of the treatment program are associated with the changes reported here. The program operates from a cognitive-behavioral model, and it is designed to be highly responsive to developmental issues in adolescence. Although the program is guided by certain principles for treating difficult-to-treat individuals, the specific techniques used to implement the treatment program are highly individualized and flexible. In addition, the program has a unique organizational and management structure that may play an important role in the effectiveness of the treatment.

Although the MJTC treatment program has demonstrated some potential to benefit adolescents with psychopathic features, the program has not been extended to adult psychopaths. It is clearly possible that psychopathic characteristics may be more responsive to treatment in adolescents than in adults. Recent research has demonstrated that adolescence is a period of rapid change in psychosocial development and the related neurological substrate (Lenroot & Geidd, 2006). The personality characteristics most related to antisocial behavior are also most susceptible to development-related change during adolescence (Blonigen, 2010). Specifically, characteristics of agreeableness, negative emotionality, and conscientiousness appear to moderate during adolescence and throughout life, in the direction that aids social adaptation (Klimstra, Luyckx, Hale, Goossens, & Meeus, 2010). Also, research has demonstrated that adolescents are acutely sensitive to interpersonal processes and influences (Steinberg & Monahan, 2007). Thus, the MJTC treatment program, which emphasizes interpersonal processes, may be uniquely effective for adolescents.

In addition, the extant literature on treatment of violent juvenile offenders contains numerous examples of programs that are effective while the youth is in active treatment but fail to demonstrate lasting changes when the youth leaves the program (Tate, Reppucci, & Mulvey, 1995). A previous study of the MJTC program found that the final behavioral scores predicted violent recidivism over a 4-year follow-up, but scores on the Psychopathy Checklist: Youth Version (Forth, Kosson, & Hare, 2003) that were calculated before treatment did not (Caldwell et al., 2007). A similar analysis could not be completed in this study because many of the participants had been released for very short times or remained in custody. Thus, the stability of the positive changes reported here has yet to be determined. It is possible that the behavioral changes observed in the program will not translate into improved community adjustment upon release.

Of course, much more study is needed to determine what elements of treatment can be applied most effectively with psychopathic youth. The essential components for an effective treatment program for adolescents with psychopathic features have not been well studied. The detailed process and timing of change in youth with psychopathic features remains entirely unexplored. It may be that some features of psychopathy are more amenable to treatment and thus more fertile targets for early intervention. Facets of psychopathy may overlap in ways that add to their resistance to change. The most striking or central feature of psychopathy may not be the most fruitful area for clinical work. For example, certain characteristics (i.e., impulsive aggression) may need to change first to pave the way for changes in the interpersonal features (i.e., conning and manipulation). These and many other issues demand detailed study.

NOTE

1. Because the admission and final scale scores were significantly correlated, analyses for multicollinearity were conducted for each regression. Tolerance and variance inflation factor values were acceptable. Tolerance values ranged from .80 to .90, and variance inflation factors ranged from 1.10 to 1.25.

REFERENCES

Aos, S., Phipps, P., Barnoski, R., & Lieb, R. (2001). *The comparative costs and benefits of programs to reduce crime: Version 4.0.* Olympia: Washington State Institute for Public Policy. Retrieved February 15, 2011, from http://www.wsipp.wa.gov/rptfiles/costbenefit.pdf

Barry, T. D., Barry, C. T., Deming, A. M., & Lochman, J. E. (2008). Stability of psychopathic characteristics in childhood: The influence of social relationships. *Criminal Justice and Behavior, 35*, 244-262. doi:10.1177/0093854807310508

Barry, T. D., Thompson, A., Barry, C. T., Lochman, J. E., Adler, K., & Hill, K. (2007). The importance of narcissism in predicting proactive and reactive aggression in moderately to highly aggressive children. *Aggressive Behavior, 33*, 185-197. doi:10.1002/ab.20198

Blonigen, D. (2010). Explaining the relationship between age and crime: Contributions from the developmental literature on personality. *Clinical Psychology Review, 30*, 889-100. doi:10.1016/j.cpr.2009.10.001

Bushman, B. J., & Baumeister, R. F. (2002). Does self-love or self-hate lead to violence? *Journal of Research in Personality, 36*, 543-545. doi:10.1016/S00926566(02)00502-0

Caldwell, M. F., McCormick, D., Umstead, D., & Van Rybroek, G. (2007). Evidence of treatment progress and therapeutic outcomes among adolescents with psychopathic features. *Criminal Justice and Behavior, 34*, 573-587. doi:10.1177/0093854806297511

Caldwell, M. F., Skeem, J., Salekin, R., & Van Rybroek, G. (2006). Treatment response of adolescent offenders with psychopathy-like features. *Criminal Justice and Behavior, 33*, 571-596. doi:10.1177/0093854806288176

Caldwell, M. F., Vitacco, M., Van Rybroek, G. (2006). Are violent delinquents worth treating? A cost-benefit analysis. *Journal of Research in Crime and Delinquency, 43*, 148-168. doi:10.1177/0022427805280053

Caputo, A. A., Frick, P. J., & Brodsky, S. L. (1999). Family violence and juvenile sex offending: The potential mediating role of psychopathic traits and negative attitudes toward women. *Criminal Justice and Behavior, 26*, 338-356. doi:10.1177/0093854899026003004

Caspi, A., & Roberts, B. W. (2001). Personality development across the life course: The argument for change and continuity. *Psychological Inquiry, 12*, 49-66. doi:10.1207/S15327965PLI1202_01

Caspi, A., Roberts, B. W., & Shiner, R. L. (2005). Personality development: Stability and change. *Annual Review of Psychology, 56,* 453-484. doi:10.1146/annurev.psych.55.090902.141913

Christian, R., Frick, P. J., Hill, N., Tyler, L. A., & Frazer, D. (1997). Psychopathy and conduct problems in children: II. Subtyping children with conduct problems based on their interpersonal and affective style. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*, 233-241. doi:10.1097/00004583-199702000-00014

Dodge, K., Price, J., Bachorowski, J., & Newman, J. (1990). Hostile attributional biases in severely aggressive adolescents. *Journal of Abnormal Psychology, 99*, 385-392. doi:10.1037/0021-843X.99.4.385

Dodge, K., & Schwartz, D (1997). Social information processing mechanism in aggressive behavior. In D. Stoff, J. Breiling, & J. Maser (Eds.), *Handbook of antisocial behavior.* New York: Wiley & Sons.

D'Silva, K., Duggan, C., & McCarthy, L. (2004). Does treatment really make psychopaths worse? A review of the evidence. *Journal of Personality Disorders, 18,* 163-177. doi:10.1521/pedi.18.2.163.32775

Falkenbach, D., Poythress, N., & Heide, K. M. (2003). Psychopathic features in a juvenile diversion population: Reliability and predictive validity of two self-report measures. *Behavioral Sciences and the Law, 21*, 787-805. doi:10.1002/bsl.562

Forth, A. E., Kosson, D., & Hare, R. D. (2003). *Psychopathy Checklist–Youth Version.* Toronto, Canada: Multi Health Systems.

Frick, P. J., Bodin, S. D., & Barry, C. T. (2000). Psychopathic traits and conduct problems in community and clinic-referred samples of children: Further development of the psychopathy screening device. *Psychological Assessment, 12*, 382. doi:10.1037/1040-3590.12.4.382

Frick, P. J., Cornell, A. H., Barry, C. T., Bodin, S. D., & Dane, H. E. (2003). Callous-unemotional traits and conduct problems the prediction of conduct problem severity, aggression, and self-report of delinquency. *Journal of Abnormal Child Psychology, 31*, 457-470. doi:10.1023/A:1023899703866

Frick, P. J., & Hare, R. D. (2001). *The Antisocial Process Screening Device (APSD)*. Toronto, Canada: Multi-Health Systems.

Frick, P. J., Kimonis, E. R., Dandreaux, D. M., & Farell, J. M. (2003). The 4 years stability of psychopathic traits in non-referred youth. *Behavioral Sciences and the Law, 21*, 1-24. doi:10.1002/bsl.568

Frick, P. J., O'Brien, B. S., Wootton, J., & McBurnett, K. (1994). Psychopathy and conduct problems in children. *Journal of Abnormal Psychology, 103*, 700-707. doi:10.1037/0021-843X.103.4.700

Frick, P. J., Stickle, T. R., Dandreaux, D. M., Farrell, J. M., & Kimonis, E. R. (2005). Callous-unemotional traits in predicting the severity and stability of conduct problems and delinquency. *Journal of Abnormal Child Psychology, 33*, 471. doi:10.1007/s10648-005-5728-9

Garfinkle, E. (2003). Coming of age in America: The misapplication of sex-offender registration and community-notification laws to juveniles. *California Law Review, 91,* 163-208.

Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. Stanford, CA: Stanford University Press.

Gretton, H. M., McBride, M., Hare, R. D., O'Shaughnessy, R., & Kumka, G. (2001). Psychopathy and recidivism in adolescent sex offenders. *Criminal Justice and Behavior, 28*, 427-449. doi:427-449.2001-18716-002

Hare, R. D. (1991). *The Hare Psychopathy Checklist—Revised*. Toronto, Canada: Multi-Health Systems.

Harris, G., & Rice, M. (2006). Treatment of psychopathy: A review of empirical findings. In C. Patrick (Ed.), *Handbook of psychopathy*. New York: Guilford.

Kimonis, E. R., Frick, P. J., Fazekas, H., & Loney, B. R. (2006). Psychopathy, aggression, and the processing of emotional stimuli in non-referred girls and boys. *Behavioral Sciences & the Law, 24*, 21-37. doi:10.1002/bsl.668

Klimstra, T., Luyckx, K., Hale, W., Goossens, L., & Meeus, W. (2010). Longitudinal associations between personality profile stability and adjustment in college students: Distinguishing among overall stability, distinctive stability, and within-time normativeness. *Journal of Personality, 78*, 1163-1184. doi:10.1111/j.1467-6494.2010.00646.x

Kruh, L. P., Frick, P. J., & Clements, C. B. (2005). Historical and personality correlates to the violence patterns of juveniles tried as adults. *Criminal Justice and Behavior, 32*, 69. doi:10.1177/0093854804270629

Lenroot, R., & Geid, J. (2006). Brain development in children and adolescents: Insights from anatomical magnetic resonance imaging. *Neuroscience and Biobehavioral Reviews*, *30*, 718-729.

Loeber, R., Burke, J. D., & Lahey, B. B. (2002). What are the antecedents to antisocial personality disorder? *Criminal Behavior and Mental Health, 12*, 24-36. doi:10.1002/cbm.484

Lynam, D. R. (2008). The stability of psychopathy from adolescence into adulthood: The search for moderators. *Criminal Justice and Behavior, 35*, 228. doi:10.1177/0093854807310153

Lynam, D. R., Caspi, A., Moffitt, T. E., Loeber, R., & Stouthamer-Loeber, M. (2007). Longitudinal evidence that psychopathy scores in early adolescence predict adult psychopathy. *Journal of Abnormal Psychology, 116*, 155-165. doi:10.1037/0021-843X.116.1.155

Lynam, D. R., Loeber, R., & Stouthamer-Loeber, M. (2008). The stability of psychopathy from adolescence into adulthood: The search for moderators. *Criminal Justice and Behavior, 35*, 228-243. doi:10.1177/0093854807310153

Muñoz, L. C., & Frick, P. J. (2007). The reliability, stability, and predictive utility of the self-report version of the Antisocial Process Screening Device. *Scandinavian Journal of Psychology, 48*, 299-312. doi:10.1111/j.1467-9450.2007.00560.x

Muñoz, L. C., Kerr, M., & Besic, N. (2008). The peer relationships of youths with psychopathic personality traits: A matter of perspective. *Criminal Justice and Behavior, 35*, 212. doi:10.1177/0093854807310159

Papps, B. P., & O'Carroll, R. E. (1998). Extremes of self-esteem and narcissism and the experience and expression of anger and aggression. *Aggressive Behavior, 24*, 421-438. doi:10.1002/(SICI)1098-2337(1998)24:6<421::AID-AB3>3.0.CO;2-3

Pardini, D. A., & Loeber, R. (2007). Special section: Interpersonal and affective features of psychopathy in children and adolescents: Advancing a developmental perspective. *Journal of Clinical Child and Adolescent Psychology, 36*, 269-275. doi:10.1177/0093854807310157

Pardini, D., & Loeber, R. (2008). Interpersonal callousness trajectories across adolescence: Early social influences and adult outcomes. *Criminal Justice and Behavior, 35*, 173-196. doi:10.1177/0093854837310157

Poythress, N. G., Douglas, K. S., Falkenbach, D., Cruise, K., Lee, Z., Murrie, D., et al. (2006). Internal consistency reliability of the self-report Antisocial Process Screening Device. *Assessment, 13*, 107-113. doi:10.1177/1073191105284279

Roberts, B. W., Caspi, A., & Moffitt, T. E. (2003). Work experiences and personality development in young adulthood. *Journal of Personality and Social Psychology, 84*, 582-593. doi:10.1037/0022-3514.84.3.582

Robins, R. W., Fraley, R. C., Roberts, B. W., & Trzesniewski, K. H. (2001). A longitudinal study of personality change in young adulthood. *Journal of Personality, 69*, 617-640. doi:10.1111/1467-6494.694157

Rogers, R., Jackson, R., Sewell, K., & Johansen, J. (2004). Predictors of treatment outcome in dually-diagnosed antisocial youth: An initial study of forensic inpatients. *Behavioral Sciences and the Law, 22*, 215-222. doi:10.1002/bsl.558

Salekin, R. T. (2002). Psychopathy and therapeutic pessimism: Clinical lore or clinical reality. *Clinical Psychology Review, 22,* 79-112. doi:10.1016/S0272-7358(01)00083-6

Salekin, R. T., & Lochman, J. E. (2008). Child and adolescent psychopathy: The search for protective factors. *Criminal Justice and Behavior, 35*, 159-172. doi:10.1177/0093854807311330

Salekin, R. T., Neumann, C. S., Leistico, A. R., DiCicco, T. M., & Duros, R. L. (2004). Psychopathy and comorbidity in a young offender sample: Taking a closer look at psychopathy's potential importance over disruptive behavior disorders. *Journal of Abnormal Psychology, 113*, 416-427. doi:10.1037/0021-843X.113.3.416

Sampson, R., & Laub, J. (1997). *Crime in the making*. Cambridge, MA: Harvard University Press.

Serin, R., & Kuriychuk, M. (1994). Social and cognitive processing deficits in violent offenders: Implications for treatment. *International Journal of Law and Psychiatry, 17*, 431 - 441.

Sherman, L. (1993). Defiance, deterrence, and irrelevance: A theory of the criminal sanction. *Journal of Research in Crime and Delinquency, 30,* 445-474. doi:10.1177/0022427893030004006

Silverthorn, P., Frick, P. J., & Reynolds, R. (2001). Timing of onset and correlates of severe conduct problems in adjudicated girls and boys. *Journal of Psychopathology and Behavioral Assessment, 23*, 171-181. doi:10.1023/A:1010917304587

Skeem, J. L., Monahan, J., & Mulvey, E. (2002). Psychopathy, treatment involvement, and subsequent violence among civil psychiatric patients. *Law and Human Behavior, 26*, 577-603. doi:10.1023/A:1020993916404

Skeem, J. L., & Petrila, J. (2004). Juvenile psychopathy: Informing the debate. *Behavioral Sciences & the Law, 22*, 1-4. doi:10.1002/bsl.580

Slaby, R., & Guerra, N. (1988). Cognitive mediators of aggression in adolescent offenders: 1. Assessment. *Developmental Psychology, 24*, 580-588. doi:10.1037/0012-1649.24.4.580

Soto, C. J., John, O. P., Gosling, S. D., & Potter, J. (2011). Age differences in personality traits from 10 to 65: Big five domains and facets in a large cross-sectional sample. *Journal of Personality and Social Psychology*, *100*, 330-348. doi:10.1037/a0021717

Steinberg, L., & Monahan, K. (2007). Age differences in resistance to peer influences. *Developmental Psychology, 43*, 1531-1543. doi:10.1037/0012-1649.43.6.1531

Steinberg, L., & Scott, E. (2010). Should juvenile offenders ever be sentenced to life without the possibility of parole? *Human Development*, *53*, 53-54. doi:10.1159/000288207

Tate, D., Reppucci, N., & Mulvey, E. (1995). Violent juvenile delinquents, treatment effectiveness and implications for future action. *American Psychologist, 50*, 777-781. doi:10.1037/0003-066X.50.9.777

Vaughn, M. G., DeLisi, M., Beaver, K. M., Wright, J. P., & Howard, M. O. (2007). Toward a psychopathology of self-control theory: The importance of narcissistic traits. *Behavioral Sciences & the Law, 25*, 803-821. doi:10.1002/bsl.789

Vaidya, J. G., Gray, E. K., Haig, J., & Watson, D. (2002). On the temporal stability of personality: Evidence for differential stability and the role of life experiences. *Journal of Personality and Social Psychology, 83*, 1469-1484. doi:10.1037//0022-3514.83.6.1469

Vitacco, M. J., Rogers, R., & Neumann, C. S. (2003). The Antisocial Process Screening Device: An examination of its construct and criterion-related validity. *Assessment*, *10*, 143-150. doi:10.1177/1073191103010002005

Wong, S., & Hare, R. D. (2005). *Guidelines for a psychopathy treatment program*. North Tonawanda, NY: Multi-Health Systems.

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